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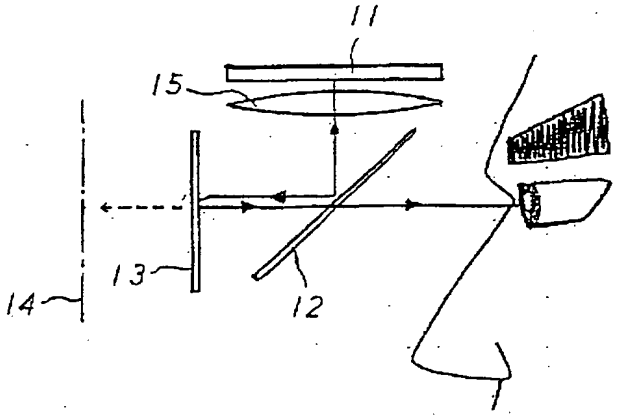
(54)【発明の名称】頭部固定型映像表示装置

(57)【要約】

【目的】　本体を頭部に搭載して映像表示を眼前の適切な位置にして画面を大きく見易くする頭部固定型映像表示装置の画面投影機構を提供するものである。

【構成】　動画映像表示手段１１及び該動画映像表示手段１１手前に平行に配置された映像透過拡大手段１５を額位置に下向きに配置し、該映像透過拡大手段１５の下側で両眼の正面手前に鼻筋の向きに略４５度斜めに第一映像透過反射手段１２を配置し、該第一映像透過反射手段１２の向うに第二映像透過反射手段１３を配置した頭部固定型映像表示装置。



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【特許請求の範囲】

【請求項１】　動画映像表示手段及び該動画映像表示手段手前に平行に配置された映像透過拡大手段を額位置に下向きに配置し、該映像透過拡大手段の下側で両眼の正面手前に鼻筋の向きに略４５度斜めに第一映像透過反射手段を配置し、該第一映像透過反射手段の向うに第二映像透過反射手段を配置したことを特徴とする頭部固定型映像表示装置。

【請求項２】　動画映像表示手段を額位置に下向きに配置し、該動画映像表示手段の下側で両眼の正面手前に鼻筋の向きに略４５度斜めに第一映像透過反射手段を配置し、該第一映像透過反射手段の向うに第二映像透過反射手段を配置したことを特徴とする頭部固定型映像表示装置。

【請求項３】　請求項１、２において第二映像透過手段を映像反射手段としたことを特徴とする頭部固定型映像表示装置。

【発明の詳細な説明】

【０００１】

【産業上の利用分野】本発明は、頭部に本体を搭載し眼前に映像が映るようにする映像表示装置の機構に関する。

【０００２】

【従来の技術】頭部にメガネのようにかけて、映像を見ることのできるディスプレイ装置としては特開平1-133479号にテレビの発光部が両眼の死角となるように配置され、その下側に長い台形の反射鏡を両眼の死角になる位置に配置し、発光されたテレビジョン画が該反射鏡で反射し凹面鏡に映り、該凹面鏡で丁度両眼に集光するように配置し、これらを頭部にスキーのゴーグルのように着脱自在に取付ける視覚装置が開示されている。

【０００３】

【発明が解決しようとする課題】上述の視覚装置では頭部に装着可能なヘッドフォン式テレビとなっているが、発光されたテレビジョン画は両眼の死角となるちょうど鼻の手前の両眼の間に位置して、テレビジョン画を凹面鏡に反射させて両目で大きな映像をみるのであるが、両眼の間の距離は３ｃｍ程しかなく、この幅の反射鏡では凹面鏡で画像を拡大しても両目で見える大きさにするには無理がある。そこで本発明では、本体を頭部に搭載して映像表示を眼前の適切な位置にして画面を大きく見易くする頭部固定型映像表示装置の画面投影機構を提供するものである。

【０００４】

【課題を解決するための手段】液晶表示板やブラウン管等の動画映像表示手段及び該動画映像表示手段手前に平行に配置された凸面レンズや凸面フレネルレンズ等の映像透過拡大手段を額位置に下向きに配置する。そして該映像透過拡大手段の下側で両眼の正面手前に鼻筋の向きに略４５度斜めに平面ハーフミラーの第一映像透過反射手段を配置し、該映像透過反射手段の向うに平面ハーフミラーや曲面ハーフミラー等の第二映像透過反射手段を配置した頭部固定型映像表示装置としてある。

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【０００５】

【作用】上記構成による映像表示装置は、動画映像表示手段に映った映像が映像透過拡大手段で拡大され、第一映像透過反射手段で反射された映像が第二映像透過反射手段で反射されて、第一映像透過反射手段を透過して眼で観察できる。

【０００６】

【実施例】図１は、本発明の頭部固定型映像表示装置を採用したテレビゲーム機を頭部に取り付けた側面図であり、図２は頭部固定型映像表示装置の画面投影機構の概略斜視図を示している。頭部固定型表示装置１は、サンバイザーの如く本体前部２をヘッドベルト３及びサイドベルト４にて操作者の頭部に締め付け固定するものである。操作者の両側耳上のサイドベルト４側にはヘッドフォン５が設けられ、操作者の両耳にあてられ、さらに一方のサイドベルト４ａ側の耳前には接続端子６ａ、６ｂが設けられている。

【０００７】接続端子６ａにはコード７が接続され、操作者の手に取って容易に操作可能にならしめるコントローラ８が接続されている。また接続端子６ｂには電源コード９が接続され、操作者の腰部のベルトに差し込み固着されるか、または衣服のポケットに収容されるバッテリーボックス１０に接続されている。

【０００８】前記本体前部２は前頭部を覆う形状になっており、前頭部中央からヘッドベルト３が後頭部に向け頭部を縦断するように設けられ、サイドベルト４ａ、４ｂが該本体両側面から頭部を横断するよう設けられ、後頭部にて合体している。このヘッドベルト３及びサイドベルト４ａ、４ｂは伸縮自在のベルトであり頭部に本体前部２を固定する。

【０００９】本体前部２は図１の頭部固定型映像表示装置の側面図及び図２に示す画面投影機構の斜視図に示すごとく、操作者の額手前に設けられ、操作者の額前方位置に液晶表示板１１を水平に設けてある。液晶表示板１１の代わりに小型のブラウン管を用いてもよい。該液晶表示板１１の投影面下側で眼前には上手前位置から前方下側に向けて斜めに投影面をカバーする大きさののハーフミラー１２が配置され、該ハーフミラーの前方には操作者の水平視界位置にハーフミラー１３が立設されている。操作者の視界には該液晶表示板１１に表示される映像を該ハーフミラー１２にて反射した映像がハーフミラー１３に反射してハーフミラー１２を透過した映像が入るのである。

【００１０】図３に画面投影機構の側面図を示してある。この構成により操作者の両眼から液晶表示板までの光学的距離は両眼からハーフミラー１２までの距離ａに該ハーフミラー１２から該ハーフミラー１３までの距離

ｂの往復２ｂに該ハーフミラー１２で反射して液晶表示板までの距離ｃを足したａ＋２ｂ＋ｃの距離になる。これにより液晶表示板の画像は、ハーフミラー１２で反転するが、この反転画像がハーフミラー１３でさらに反転するので操作者の両眼には正立画像が目の前ａ＋２ｂ＋ｃの距離に虚像１４として浮かび上がって見えるのである。操作者の視界に入る映像は、ハーフミラー１３を透過して外光は入ってくるので外の景色をみることができる。

【００１１】図４には第２実施例としての画面投影機構の概略斜視図を示してある。液晶表示板１１の下側の視界を妨げない眼前の上に該液晶表示板に平行にフレネルレンズ１５または凸面レンズを設け、該フレネルレンズ１５の下側にはハーフミラー１２があり、ハーフミラー１２の前方にハーフミラー１３が設けてある。この構成では液晶表示板１１の画像がフレネルレンズ１５で拡大され、その画像がハーフミラー１２及びハーフミラー13で反射して該ハーフミラー１２を透過して視界に入ってくる。従ってフレネルレンズ１５で拡大された画像は大きく、ａ＋２ｂ＋ｃの距離よりも遠くに浮かび上がって見えるのである。目に疲労を感じさせないようにフレネルレンズ１５及びハーフミラー１２、１３によって映像が眼前２５ｃｍから３０ｃｍ程度の距離に虚像１４として見えるようにしてあり、さらにはハーフミラー１３から透過して外光が入ってくるので外の景色を見ることができる。

【００１２】図５には、第３実施例としての画面投影機構の概略斜視図を示してある。これは液晶表示板１１の下側の眼前に斜めに配置したハーフミラー１２と該ハーフミラー１２の手前に配置した凹面が眼側にある曲面ハーフミラー１６を立設してある。この曲面ハーフミラー１６は横方向に曲率をつければ、画像は横方向に拡大され、操作者の視界には横方向に広がった画像として見える。この横方向が広がった画像はシネマスコープの画面のようになり、まるで映画を見えているような印象を操作者に与えるのである。もちろん曲面ハーフミラー１６の縦方向に曲率を付ければ画像は縦方向に拡大され、縦方向に広がった画像が見えるし、曲面ハーフミラー１６を球面とすれば画面全体が拡大される。上記説明では曲面ハーフミラー１６としてあるが、場合によっては光の透過性のない反射作用のみの曲面ミラーとすると外の景色が入射してこないので、液晶表示板に映っている画像のみを見ることも可能である。

【００１３】図１に戻り、前記液晶表示板１１の上側にはバックライト１７が位置して該液晶表示板１１を裏側から均一に照らし、明るい映像が得られるようにしてある。そしてバックライト１７の上側には本体前部の形状にあわせた駆動回路基板１８が配置されている。液晶表示板１１の代わりにブラウン管を用いる場合はバックライト１７は使用する必要はない。

【００１４】駆動回路基板１８の中央前部にはゲーム等のソフトウェアが収納してあるソフトウェアカートリッジ１９が該駆動回路基板１８の後方中央に固着された接続コネクタ２０に前方向から差し込み装着される。前記駆動回路基盤１８には液晶表示板１１の駆動回路やコンピュータ回路が設けられ、コンピュータではソフトウェアカートリッジ１９からのソフトウェアを読み込み、手元のコントローラ８からの操作信号により情報処理をし、液晶表示用の駆動回路を介して液晶表示板１１に映像を映し、ヘッドフォン５に音信号を送くり、操作者は液晶表示板１１に映し出される映像を見ながら、コントローラ８を操作し、ゲームを進めることができる。

【００１５】上記実施例ではバッテリーボックス１０を本体から離してあるが、バッテリーは本体をヘルメット状に構成して耳上の頭部両側に均等に配置してもよいのは勿論である。さらに実施例ではテレビゲームを例にして説明したが、もちろん商業放送を受信するテレビとしてもよく、この場合は駆動回路基板１８に受信回路を追加して設けてもよいし、バッテリーボックス１０のように外部に受信装置を設けてもよい。また本体には液晶駆動回路１０が内蔵されているのでゲームソフトウェアカートリッジの代わりにビデオテープレコーダを外部にもってその映像ソフトを楽しむようにしてもよい。

【００１６】これらの構造から画像は左右両眼で見てもよいが、中央に縦に仕切りを設けて左右別々の映像をみるようにしておけば、左右其々の画像を映すことによって立体映像を楽しむことも可能である。

【００１７】

【発明の効果】以上説明したように本発明の頭部固定型映像表示装置は、本体を操作者の前頭部に搭載して、映像表示を眼前の適切な位置に映るようにしてあり、画像表示部に映った画像を２回反射しているので操作者の眼に入る画像も反転した画像ではなく正立画像となる。また曲面ミラーを採用することにより虚像の画面比率を変えることができ、さらにハーフミラーを通して外の景色をも見ることができるので、歩きながらでも画像を安全にみることが可能であり、また本装置は頭部に固定できるので寝転がりながらでも画像が見れる映像表示装置を提供している。

【図面の簡単な説明】

【図１】頭部固定型映像表示装置を採用したテレビゲーム機を頭部に取り付けた側面図である。

【図２】頭部固定型映像表示装置の画面投影機構の概略斜視図である。

【図３】画面投影機構の側面図である

【図４】第２実施例としての画面投影機構の概略斜視図である。

【図５】第３実施例としての画面投影機構の概略斜視図である。

【符号の説明】

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1　頭部固定表示装置
2　本体前部
3　ヘッドベルト
4　サイドベルト
5　ヘッドフォン
6ａ　接続端子
6ｂ　接続端子
7　コード
8　コントローラ
9　電源コード
１０　バッテリーボックス

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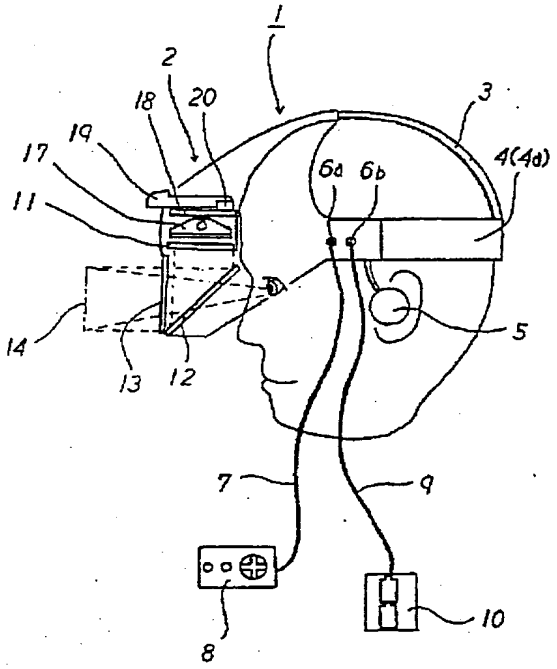
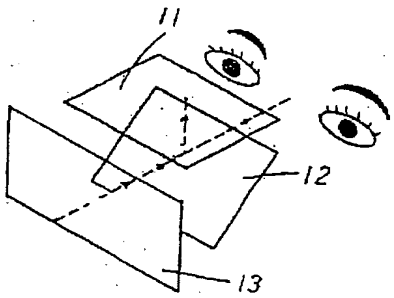
１１　液晶表示板
１２　ハーフミラー
１３　ハーフミラー
１４　虚像
１５　フレネルレンズ
１６　曲面ハーフミラー
１７　バックライト
１８　駆動回路基盤
１９　ソフトウェアカートリッジ
２０　接続コネクタ

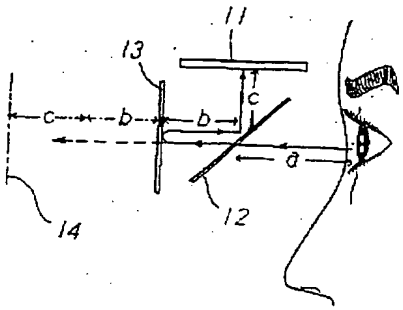
【図１】



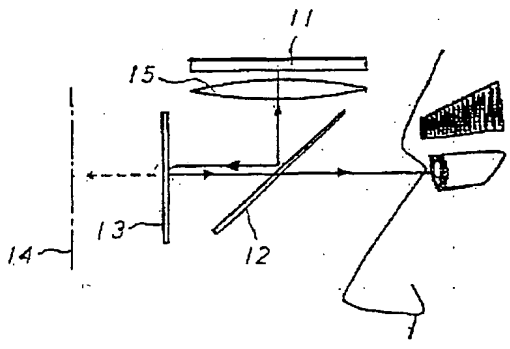
【図２】



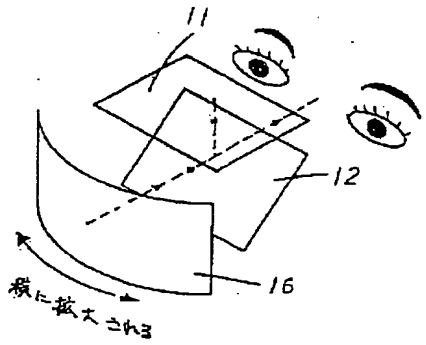
【図３】



【図４】



【図５】



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(71)Applicant : SEGA ENTERP LTD

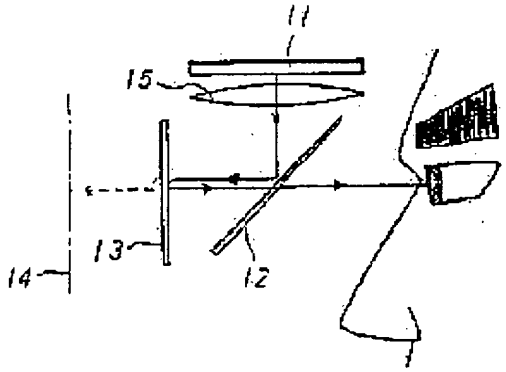
(72)Inventor : TOZAKI KENJI

(54) HEAD FIXED TYPE VIDEO DISPLAY DEVICE

(57)Abstract:

PURPOSE: To make a screen easy to see by positioning a video display to the proper eye position with the main body attached to the head.

CONSTITUTION: A moving picture video display means 11 and a video transmission expanding means 15 aligned in parallel with the moving picture video display means 11 are arranged on the forehead downward. At the lower side of the video transmission expanding means 15, a first video transmission reflection means 12 is arranged in front of the eyes at almost 45° obliquely from the nose. A second video transmission reflection means 13 is arranged over the first video transmission reflection means 12.



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CLAIMS

[Claim(s)]
[Claim 1] The head cover-half graphic display device characterized by to have arranged downward the image transparency amplification means arranged in an animation graphic-display means and this animation graphic-display means this side at parallel in a frame location, to have arranged a first image transparency reflective means aslant [45 abbreviation] to the sense of nasal muscle before [transverse-plane] both eyes with this image transparency amplification means down side, and to have arranged a second image transparency reflective means beyond this first image transparency reflective means.
[Claim 2] The head cover-half graphic display device characterized by having arranged the animation graphic display means downward in the frame location, having arranged the first image transparency reflective means aslant [45 abbreviation] to the sense of nasal muscle before [transverse-plane] both eyes with this animation graphic display means down side, and having arranged the second image transparency reflective means beyond this first image transparency reflective means.
[Claim 3] The head cover-half graphic display device characterized by making the second image transparency means into an image reflective means in claims 1 and 2.

[Translation done.]

* NOTICES *

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Industrial Application] This invention relates to the device of a graphic display device in which carry a body in a head and it is made for an image to be reflected before it.
[0002]
[Description of the Prior Art] Apply to a head like glasses, and it is arranged so that the light-emitting part of television may become JP,1-133479,A with the dead angle of both eyes as a display unit which can see an image. A trapezoid reflecting mirror long to the down side is arranged in the location which becomes the dead angle of both eyes, the television drawing which emitted light reflects it in it with this reflecting mirror, and it is reflected in a concave mirror, it arranges so that it may condense in both eyes exactly with this concave mirror, and the vision equipment which attaches these in a head free [attachment and detachment] like the goggles of skiing is indicated.
[0003]
[Problem(s) to be Solved by the Invention] Although it is headphone type television with which a head can be equipped with above-mentioned vision equipment the television drawing which emitted light serves as a dead angle of both eyes, although it is exactly located among the both eyes before a nose, a concave mirror is made to reflect television drawing and a big image is seen by both eyes Even if there is no distance between both eyes and it expands an image with a concave mirror in the reflecting mirror of this width of face only by about 3cm, making it the magnitude which is visible by both eyes has unreasonableness. So, in this invention, the screen projector style of the head cover-half graphic display device which carries a body in a head, makes graphic display a suitable location in sight, and makes a screen legible greatly is offered.
[0004]
[Means for Solving the Problem] Image transparency amplification means arranged in animation graphic display means, such as a liquid crystal display panel and the Braun tube, and this animation graphic display means this side at parallel, such as a convex lens and a convex Fresnel lens, are arranged downward in a frame location. And it has considered as the head cover-half graphic display device which has arranged the first image transparency reflective means of a flat-surface half mirror aslant [45 abbreviation] to the sense of nasal muscle before [transverse-plane] both eyes with this image transparency amplification means down side, and has arranged the second image transparency reflective means, such as a flat-surface half mirror and a curved-surface half mirror, beyond this image transparency reflective means.
[0005]
[Function] The image in which the image reflected in the animation graphic display means was expanded with the image transparency amplification means, and was reflected with the first image transparency reflective means is reflected with the second image transparency reflective means, and the graphic display device by the above-mentioned configuration penetrates the first image transparency reflective means, and can observe it by the eye.
[0006]
[Example] Drawing 1 is the side elevation which attached in the head the video game machine which adopted the head cover-half graphic display device of this invention, and drawing 2 shows the outline perspective view of the screen projector style of a head cover-half graphic display device. Like a sun visor, the head cover-half indicating equipment 1 binds the body anterior part 2 tight on an operator's head by the head belt 3 and the side belt 4, and is fixed. Headphone 5 are formed in the side belt 4 side on an operator's both-sides lug, it is hit to

both an operator's lugs and the connection terminals 6a and 6b are formed before the lug by the side of one [further] side belt 4a.

[0007] A code 7 is connected to connection terminal 6a, and the controller 8 which takes in an operator's hand and is made to become operational easily is connected. Moreover, a power cord 9 is connected to connection terminal 6b, and it connects with the dc-battery box 10 which inserts in the belt of an operator's lumbar part, and fixes, or is held in the pocket of clothes.

[0008] Said body anterior part 2 is a wrap configuration about the regio frontalis capitis, it was prepared so that the head belt 3 might travel through a head towards the regio occipitalis capitis from the center of the regio frontalis capitis, it was prepared so that the side belts 4a and 4b might cross a head from this body both-sides side, and it has coalesced in the regio occipitalis capitis. This head belt 3 and the side belts 4a and 4b are elastic belts, and fix the body anterior part 2 to a head.

[0009] As shown in the perspective view of the screen projector style shown in the side elevation and drawing 2 of a head cover-half graphic display device of drawing 1 , the body anterior part 2 is formed before [frame] an operator, and has formed the liquid crystal display panel 11 in an operator's frame front location horizontally. The small Braun tube may be used instead of a liquid crystal display panel 11. The half mirror 12 of ** is arranged in the size which covers [with the plane-of-projection down side of this liquid crystal display panel 11] plane of projection aslant towards the front bottom from the location before skillful before it, and the half mirror 13 is set up by an operator's level field-of-view location ahead of this half mirror. The image on which the image which reflected in an operator's field of view the image displayed on this liquid crystal display panel 11 by this half mirror 12 reflected in the half mirror 13, and penetrated the half mirror 12 enters.

[0010] The side elevation of a screen projector style is shown in drawing 3 . It becomes the distance of a+2b+c which reflected the optical distance from an operator's both eyes to a liquid crystal display panel in the distance a from both eyes to a half mirror 12 by this half mirror 12 by this configuration at both-way 2b of the distance b from this half mirror 12 to this half mirror 13, and added the distance c to a liquid crystal display panel. Thereby, although it is reversed with a half mirror 12, since this reverse image is further reversed with a half mirror 13, an erection image emerges as a virtual image 14 in the distance of before [an eye] a+2b+c, and the image of a liquid crystal display panel has it. [visible to an operator's both eyes] The image included in an operator's field of view penetrates a half mirror 13, and since close comes in outdoor daylight, an outer scene can be seen.

[0011] The outline perspective view of the screen projector style as the 2nd example is shown in drawing 4 . On the view which does not bar the field of view of the liquid crystal display panel 11 bottom, Fresnel lens 15 or a convex lens is prepared in parallel at this liquid crystal display panel, there is a half mirror 12 in this Fresnel lens 15 bottom, and the half mirror 13 is formed ahead of the half mirror 12. The image of a liquid crystal display panel 11 is expanded with Fresnel lens 15, that image reflects by the half mirror 12 and the half mirror 13, this half mirror 12 is penetrated, and close comes to a field of view by this configuration. Therefore, the image expanded with Fresnel lens 15 is large, and emerges and appears in the distance rather than the distance of a+2b+c. It is made for the image to have seemed not to impress fatigue in an eye in the distance of about 30cm as a virtual image 14 from 25cm of views with Fresnel lens 15 and half mirrors 12 and 13, it penetrates from a half mirror 13 further, and since close comes, outdoor daylight can see an outer scene.

[0012] The outline perspective view of the screen projector style as the 3rd example is shown in drawing 5 . This has set up the curved-surface half mirror 16 which has the concave surface arranged before the half mirror 12 aslant arranged to the view of the liquid crystal display panel 11 bottom, and this half mirror 12 in an eye side. If this curved-surface half mirror 16 gives curvature to a longitudinal direction, an image is expanded to a longitudinal direction and it is visible to an operator's field of view as an image which spread in the longitudinal direction. The image with which this longitudinal direction spread becomes like the screen of Cinema Scope, and the impression which seems a film **** completely is given to an operator. If curvature is attached to the lengthwise direction of the curved-surface half mirror 16, of course, an image will be expanded to a lengthwise direction, the image which spread in the lengthwise direction will appear, and the spherical surface, then the whole screen will be expanded in the curved-surface half mirror 16. Although considered as the curved-surface half mirror 16 in the above-mentioned explanation, since an outer scene will not carry out incidence if it is the curved-surface mirror of only the reflex action which does not have the permeability of light depending on the case, it is also possible to see only the image reflected in a liquid crystal display panel.

[0013] A back light 17 is located in said return and liquid crystal display panel 11 upside at drawing 1 , and the

bright image has been acquired from the background in the light of homogeneity in this liquid crystal display panel 11. And the actuation circuit board 18 united with the configuration of body anterior part is arranged at the back light 17 upside. When using the Braun tube instead of a liquid crystal display panel 11, it is not necessary to use a back light 17.

[0014] The connection connector 20 which fixed in the center of back of this actuation circuit board 18 is inserted and equipped with the software cartridge 19 which has contained software, such as a game, from front at the central anterior part of the actuation circuit board 18. The actuation circuit and computer circuitry of a liquid crystal display panel 11 can be prepared in said actuation circuit base 18, by computer, the software from the software cartridge 19 is read, information is processed with the manipulate signal from the controller 8 at hand, and an image is projected on a liquid crystal display panel 11 through the actuation circuit for liquid crystal displays, looking at the image to which ****** and an operator project a sound signal on headphone 5 at a liquid crystal display panel 11, a controller 8 can be operated and a game can be advanced.

[0015] Although the dc-battery box 10 is separated from the body in the above-mentioned example, as for a dc-battery, it is needless to say that a body may be constituted in the shape of a helmet, and may be uniformly arranged on head both sides on a lug. Although the TV game was made into the example and the example furthermore explained it, it may be good also as television which receives commercial broadcasting, of course, a receiving circuit may be added and established in the actuation circuit board 18 in this case, and a receiving set may be formed outside like the dc-battery box 10. Moreover, since the liquid crystal actuation circuit 10 is built in the body, it has a video tape recorder outside instead of a game software cartridge, and you may make it enjoy the image software.

[0016] although an image may be seen with right-and-left both eyes from such structures -- a center -- length -- a partition -- preparing -- right and left -- if a separate image is seen, it is also possible by projecting the image of each right and left to enjoy 3-dimensional scenography.

[0017]

[Effect of the Invention] As explained above, the head cover-half graphic display device of this invention carries a body in an operator's regio frontalis capitis, graphic display is made to be reflected in the suitable location in sight, and since it is reflecting twice the image reflected in the image display section, it serves as the erection image instead of an image which also reversed the image included in an operator's eye. Moreover, it is possible to see an image safely even with a walk, since the screen ratio of a virtual image can be changed and an outer scene can also be further seen through a half mirror by adopting a curved-surface mirror, and this equipment offers the graphic display device with which an image can be seen but, lying down, since it is fixable to a head.

[Translation done.]

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TECHNICAL FIELD

[Industrial Application] This invention relates to the device of a graphic display device in which carry a body in a head and it is made for an image to be reflected before it.

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PRIOR ART

[Description of the Prior Art] Apply to a head like glasses, and it is arranged so that the light-emitting part of television may become JP,1-133479,A with the dead angle of both eyes as a display unit which can see an image. A trapezoid reflecting mirror long to the down side is arranged in the location which becomes the dead angle of both eyes, the television drawing which emitted light reflects it in it with this reflecting mirror, and it is reflected in a concave mirror, it arranges so that it may condense in both eyes exactly with this concave mirror, and the vision equipment which attaches these in a head free [attachment and detachment] like the goggles of skiing is indicated.

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EFFECT OF THE INVENTION

[Effect of the Invention] As explained above, the head cover-half graphic display device of this invention carries a body in an operator's regio frontalis capitis, graphic display is made to be reflected in the suitable location in sight, and since it is reflecting twice the image reflected in the image display section, it serves as the erection image instead of an image which also reversed the image included in an operator's eye. Moreover, it is possible to see an image safely even with a walk, since the screen ratio of a virtual image can be changed and an outer scene can also be further seen through a half mirror by adopting a curved-surface mirror, and this equipment offers the graphic display device with which an image can be seen but, lying down, since it is fixable to a head.

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TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] Although it is headphone type television with which a head can be equipped with above-mentioned vision equipment the television drawing which emitted light serves as a dead angle of both eyes, although it is exactly located among the both eyes before a nose, a concave mirror is made to reflect television drawing and a big image is seen by both eyes Even if there is no distance between both eyes and it expands an image with a concave mirror in the reflecting mirror of this width of face only by about 3cm, making it the magnitude which is visible by both eyes has unreasonableness. So, in this invention, the screen projector style of the head cover-half graphic display device which carries a body in a head, makes graphic display a suitable location in sight, and makes a screen legible greatly is offered.

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MEANS

[Means for Solving the Problem] Image transparency amplification means arranged in animation graphic display means, such as a liquid crystal display panel and the Braun tube, and this animation graphic display means this side at parallel, such as a convex lens and a convex Fresnel lens, are arranged downward in a frame location. And it has considered as the head cover-half graphic display device which has arranged the first image transparency reflective means of a flat-surface half mirror aslant [45 abbreviation] to the sense of nasal muscle before [transverse-plane] both eyes with this image transparency amplification means down side, and has arranged the second image transparency reflective means, such as a flat-surface half mirror and a curved-surface half mirror, beyond this image transparency reflective means.

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OPERATION

[Function] The image in which the image reflected in the animation graphic display means was expanded with the image transparency amplification means, and was reflected with the first image transparency reflective means is reflected with the second image transparency reflective means, and the graphic display device by the above-mentioned configuration penetrates the first image transparency reflective means, and can observe it by the eye.

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EXAMPLE

[Example] Drawing 1 is the side elevation which attached in the head the video game machine which adopted the head cover-half graphic display device of this invention, and drawing 2 shows the outline perspective view of the screen projector style of a head cover-half graphic display device. Like a sun visor, the head cover-half indicating equipment 1 binds the body anterior part 2 tight on an operator's head by the head belt 3 and the side belt 4, and is fixed. Headphone 5 are formed in the side belt 4 side on an operator's both-sides lug, it is hit to both an operator's lugs and the connection terminals 6a and 6b are formed before the lug by the side of one [further] side belt 4a.
[0007] A code 7 is connected to connection terminal 6a, and the controller 8 which takes in an operator's hand and is made to become operational easily is connected. Moreover, a power cord 9 is connected to connection terminal 6b, and it connects with the dc-battery box 10 which inserts in the belt of an operator's lumbar part, and fixes, or is held in the pocket of clothes.
[0008] Said body anterior part 2 is a wrap configuration about the regio frontalis capitis, it was prepared so that the head belt 3 might travel through a head towards the regio occipitalis capitis from the center of the regio frontalis capitis, it was prepared so that the side belts 4a and 4b might cross a head from this body both-sides side, and it has coalesced in the regio occipitalis capitis. This head belt 3 and the side belts 4a and 4b are elastic belts, and fix the body anterior part 2 to a head.
[0009] As shown in the perspective view of the screen projector style shown in the side elevation and drawing 2 of a head cover-half graphic display device of drawing 1 , the body anterior part 2 is formed before [frame] an operator, and has formed the liquid crystal display panel 11 in an operator's frame front location horizontally. The small Braun tube may be used instead of a liquid crystal display panel 11. The half mirror 12 of ** is arranged in the size which covers [with the plane-of-projection down side of this liquid crystal display panel 11] plane of projection aslant towards the front bottom from the location before skillful before it, and the half mirror 13 is set up by an operator's level field-of-view location ahead of this half mirror. The image on which the image which reflected in an operator's field of view the image displayed on this liquid crystal display panel 11 by this half mirror 12 reflected in the half mirror 13, and penetrated the half mirror 12 enters.
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[0011] The outline perspective view of the screen projector style as the 2nd example is shown in drawing 4 . On the view which does not bar the field of view of the liquid crystal display panel 11 bottom, Fresnel lens 15 or a convex lens is prepared in parallel at this liquid crystal display panel, there is a half mirror 12 in this Fresnel lens 15 bottom, and the half mirror 13 is formed ahead of the half mirror 12. The image of a liquid crystal display panel 11 is expanded with Fresnel lens 15, that image reflects by the half mirror 12 and the half mirror 13, this half mirror 12 is penetrated, and close comes to a field of view by this configuration. Therefore, the image expanded with Fresnel lens 15 is large, and emerges and appears in the distance rather than the distance of a+2b+c. It is made for the image to have seemed not to impress fatigue in an eye in the distance of about

30cm as a virtual image 14 from 25cm of views with Fresnel lens 15 and half mirrors 12 and 13, it penetrates from a half mirror 13 further, and since close comes, outdoor daylight can see an outer scene.
[0012] The outline perspective view of the screen projector style as the 3rd example is shown in drawing 5 . This has set up the curved-surface half mirror 16 which has the concave surface arranged before the half mirror 12 aslant arranged to the view of the liquid crystal display panel 11 bottom, and this half mirror 12 in an eye side. If this curved-surface half mirror 16 gives curvature to a longitudinal direction, an image is expanded to a longitudinal direction and it is visible to an operator's field of view as an image which spread in the longitudinal direction. The image with which this longitudinal direction spread becomes like the screen of Cinema Scope, and the impression which seems a film **** completely is given to an operator. If curvature is attached to the lengthwise direction of the curved-surface half mirror 16, of course, an image will be expanded to a lengthwise direction, the image which spread in the lengthwise direction will appear, and the spherical surface, then the whole screen will be expanded in the curved-surface half mirror 16. Although considered as the curved-surface half mirror 16 in the above-mentioned explanation, since an outer scene will not carry out incidence if it is the curved-surface mirror of only the reflex action which does not have the permeability of light depending on the case, it is also possible to see only the image reflected in a liquid crystal display panel.
[0013] A back light 17 is located in said return and liquid crystal display panel 11 upside at drawing 1 , and the bright image has been acquired from the background in the light of homogeneity in this liquid crystal display panel 11. And the actuation circuit board 18 united with the configuration of body anterior part is arranged at the back light 17 upside. When using the Braun tube instead of a liquid crystal display panel 11, it is not necessary to use a back light 17.
[0014] The connection connector 20 which fixed in the center of back of this actuation circuit board 18 is inserted and equipped with the software cartridge 19 which has contained software, such as a game, from front at the central anterior part of the actuation circuit board 18. The actuation circuit and computer circuitry of a liquid crystal display panel 11 can be prepared in said actuation circuit base 18, by computer, the software from the software cartridge 19 is read, information is processed with the manipulate signal from the controller 8 at hand, and an image is projected on a liquid crystal display panel 11 through the actuation circuit for liquid crystal displays, looking at the image to which ****** and an operator project a sound signal on headphone 5 at a liquid crystal display panel 11, a controller 8 can be operated and a game can be advanced.
[0015] Although the dc-battery box 10 is separated from the body in the above-mentioned example, as for a dc-battery, it is needless to say that a body may be constituted in the shape of a helmet, and may be uniformly arranged on head both sides on a lug. Although the TV game was made into the example and the example furthermore explained it, it may be good also as television which receives commercial broadcasting, of course, a receiving circuit may be added and established in the actuation circuit board 18 in this case, and a receiving set may be formed outside like the dc-battery box 10. Moreover, since the liquid crystal actuation circuit 10 is built in the body, it has a video tape recorder outside instead of a game software cartridge, and you may make it enjoy the image software.
[0016] although an image may be seen with right-and-left both eyes from such structures -- a center -- length -- a partition -- preparing -- right and left -- if a separate image is seen, it is also possible by projecting the image of each right and left to enjoy 3-dimensional scenography.

[Translation done.]

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] It is the side elevation which attached in the head the video game machine which adopted the head cover-half graphic display device.
[Drawing 2] It is the outline perspective view of the screen projector style of a head cover-half graphic display device.
[Drawing 3] It is the side elevation of a screen projector style.
[Drawing 4] It is the outline perspective view of the screen projector style as the 2nd example.
[Drawing 5] It is the outline perspective view of the screen projector style as the 3rd example.
[Description of Notations]
1 Head Fixed Display
2 Body Anterior Part
3 Head Belt
4 Side Belt
5 Headphone
6a Connection terminal
6b Connection terminal
7 Cord
8 Controller
9 Power Cord
10 Dc-battery Box
11 Liquid Crystal Display Panel
12 Half Mirror
13 Half Mirror
14 Virtual Image
15 Fresnel Lens
16 Curved-Surface Half Mirror
17 Back Light
18 Actuation Circuit Base
19 Software Cartridge
20 Connection Connector

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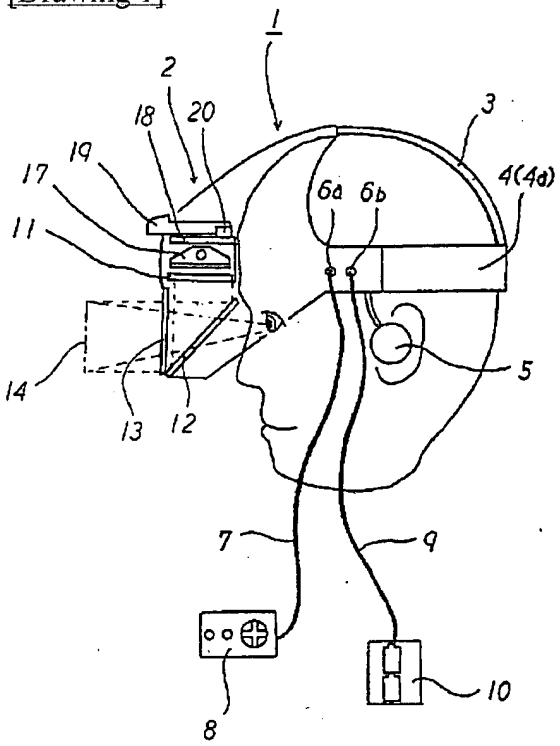
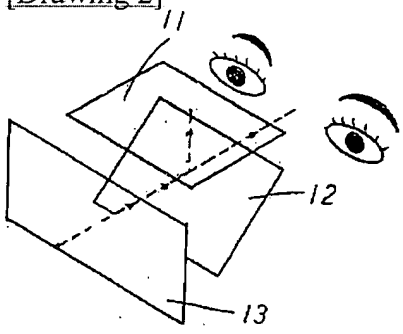
DRAWINGS

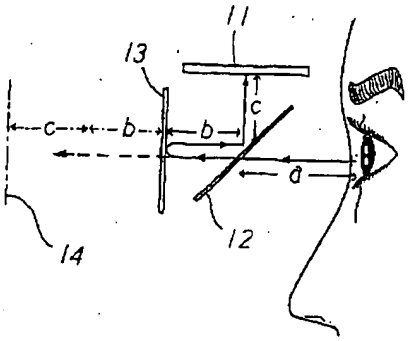
[Drawing 1]



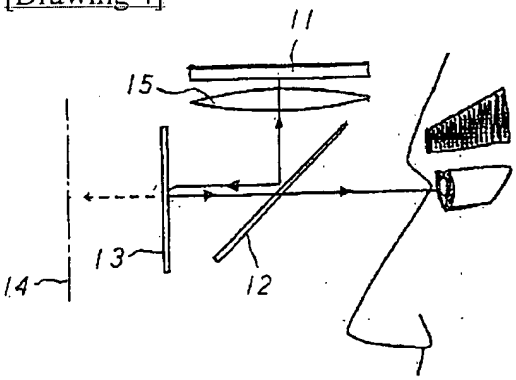
[Drawing 2]



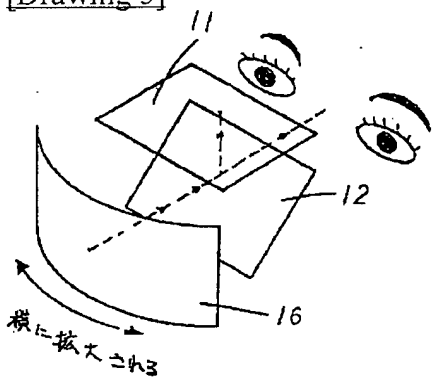
[Drawing 3]



[Drawing 4]



[Drawing 5]



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